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CLAIMSPTO / csd

Please cancel claims 4 and 5

Delete claims 17-20

1. (Fourth Amendment) Solid state substrate adapted and configured for DNA immobilization, said solid state substrate having a thermal conductivity ratio of at least 0.1W/cmEK for amplifying and immobilizing DNA, wherein the surface of the substrate is modified polar radical at the surface of the substrate by binding a chloride by irradiating the surface of the substrate with ultraviolet light in an atmosphere of chlorine gas to bind chloride to the substrate, and replacing the chloride by a hydroxyl radical by dipping the substrate into a boiling alkali solution or steam, or by binding an amino radical to the subsrate by irradiating the substrate with ultraviolet light in an ammonia gas atmosphere, or by binding a carboxyl radical to the substrate by dipping the substrate into a solution containing a carboxyl radical or an epoxy radical.

2. (Twice Amended) A substrate as claimed in claim 1, wherein said substrate is natural diamond, synthetic diamond, or diamond-like carbon.

Cancel claim 3

6. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is a carboxyl radical and said carboxyl radical is connected on a surface of said substrate through ester linkage.

7. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is a carboxyl radical and said carboxyl radical is connected on a surface of said substrate through amide linkage.

8. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is a carboxyl radical and said carboxyl radical is introduced to a surface of said substrate with a silane coupling agent, a titanium coupling agent or an aluminum coupling agent.

10. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is an amino radical and said amino radical is introduced to a surface of said substrate with a silane coupling agent, a titanium coupling agent or an aluminum coupling agent.

13. (Third Amendment) A solid state substrate having DNA immobilized thereon, wherein said substrate is diamond or diamond like carbon and is chemically modified by binding a chloride by irradiating the substrate with ultraviolet light in a chlorine gas atmosphere, and then replacing the chloride with a hydroxyl radial by dipping the substrate into a boiling alkali solution or steam, or an amino radical by irradiating the substrate with ultraviolet light in an atmosphere ammonia gas, or a carboxyl radical by dipping the substrate into a solution containing a carboxyl radical or an epoxy radical.

16. (Twice Amended) A chip for amplifying and immobilizing DNA wherein the surface of the chip is modified by binding a chloride by irradiating the chip with ultraviolet light in an atmosphere of chlorine gas, and replacing the chloride by a hydroxyl radical by dipping the chip into a boiling alkali solution or steam, or an amino-radical by irradiating the chip with ultraviolet light in an atmosphere of ammonia gas, or a carboxyl radical by dipping the chip into a solution containing a carboxyl radical or an epoxy radical.